



INTERNET USE IN RELATION TO GENDER AND COMPUTER ANXIETY WITH DIFFERENT LEVELS OF INTERNET SELF EFFICACY

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ABSTRACT

The study was conducted to find out internet use in relation to gender and computer anxiety with different levels of internet self efficacy. Sample comprised of 400 adolescents of IXth class (i.e. 200 males and 200 females) of Government Senior Secondary Schools of Chandigarh. Descriptive method was used. Results revealed that male adolescents exhibited better internet use as compared to female adolescents and significant difference among adolescents with low, moderate and high computer anxiety with respect to internet use was also found but no significant interaction was found among gender, internet self efficacy and computer anxiety of adolescents with respect to internet use.

INTRODUCTION:

Internet Use:

The Internet is a global system of connections between millions of computers that allows almost instant access to and dissemination of information. The use of the Internet as an instructional tool in higher education is rapidly increasing. Today, there is an increase in the development of academic course websites with huge amounts of learning materials imbedded within them. The Internet's ability to provide students quick access to government documents, scholarly list serves, and databases located at geographically-removed institutions makes it a valuable information source for students (Benson, 1994; Lubans, 1998; Ryan, 1994). The integration of the Internet as a teaching tool in academic courses has grown rapidly. Many universities, including leading academic institutes, are implementing advanced technologies as a part of existing teaching frameworks (AFT, 2001). It is typical to see Web pages for courses in all fields taught at universities and colleges providing course notes and related resources as supplements to courses that are delivered in traditional classrooms (Zaiane, 2001). The Internet is mainly used for information transferring from the teacher to the student. However, the mere posting of academic materials on the Web may not result in students utilizing these materials to enhance their learning or course understanding (Cummings, Bonk, & Jacobs, 2002). Bork (2001) claimed that although an enormous amount of material for Web-based learning is developed, there is little empirical consideration of the learning effectiveness of these materials. Educators using Web-based learning environments are in urgent need for no intrusive and automatic ways to get objective feedback from learners to better follow the learning process and appraise the effectiveness of online course structure (Zaiane, 2001). The Web supports many forms of learner interactivity and engagement, and provides access to a vast repository of resources (Oliver & McLoughlin, 1999). In addition, the Web is used in response to the needs of learners for improvement in accessibility and convenience, to lower costs, and to increase the relevance of contents for the workplace (Beller & Or, 1998).

Studies on Internet use:

Valkenburg, Peter and Schouten (2006) investigated the consequences of friend networking sites (e.g., Friendster, MySpace) for adolescents' self-esteem and well-being. Survey was conducted among 881 adolescents (10–19-year olds) who had an online profile on a Dutch friend-networking site. Using structural equation modeling, it was found that the frequency with which adolescents used the site had an indirect effect on their social self-esteem and well-being. The use of the friend-networking site stimulated the number of relationships formed on the site, the frequency with which adolescents received feedback on their profiles, and the tone (i.e., positive vs. negative) of this feedback. Positive feedback on the profiles enhanced adolescents' social self-esteem and well-being, whereas negative feedback decreased their self-esteem and well-being.

Johnson (2007) conducted a study on 405 college students of Western Canada to assess pattern of Internet use and results describe college students, with rare exception, as internet users. The vast majority of college students frequently communicates online and access websites. While an Internet game experience is typical, relatively few college students are heavy online gamers. Overwhelmingly (i.e., 77.8%), college students conceptualized the Internet as a convenience, although 17.8% considered the Internet a source of amusement. Approximately 5% of college students reported negative perceptions of the internet (frustrating or a waste of time).

Shinde and Patel (2014) conducted a study to assess Correlation between "Problematic Internet Use" And Mental Health in Professional Education Students.

The objectives of their study were: 1. To assess the use of internet and mental health among professional education students. 2. To find the co-relation between the Problematic Internet Use and Mental Health in professional education students. Descriptive cross sectional survey was conducted research design with 100 professional educational students. Results revealed that majority of students education is 74% in undergraduate, and 86% of females were in the age group of 20-25 years are of basic B.Sc. nursing. Majority 62% of them were using internet for 3 years and above, where maximum 66% students were using internet for their personal use. Out of that 42% do login on face book and for web search is 35%, while majority 85% students were using internet 1-4 hours/day. Majority 65% of the students were moderate users of Internet and 34% minimal users follow this. Only 1% was classified excessive user. The level of Internet addiction among professional students was moderate and tends to be minimal. 84% of students were suffering average physical problems while 83% of students were suffering from anxiety where 94% of them were affected by social performance averagely. Majority 73% of them showed average depression. The Correlation was significant at the 0.05 level between excessive Internet use, neglect of work, neglect of social life and physical problems as a part of mental health among students.

Gender:

The term 'gender' will be used according to the description of McGregor & Bazi (2001): "Whereas the sex of an individual is biologically determined, gender refers to the socially constructed definition of females and males and the relationship between them. Gender is culture-specific and also varies over time. It determines the conception of tasks, functions and roles attributed to women and men in society, in both public and private life". As early as in the 1960s, technology is known as being biased towards the interest and styles of men. Women look at computers and see them more as machines, thus considering computers as masculine. This issue is being discussed by many researchers and it is seen as evidence that culture shapes the way a woman is brought up. Therefore, woman basically has this phenomenon that they do not belong to technology. For instance, many researchers indicate that parents, teachers and software manufacturers tend to give girls clues that computer science is not for them, thus it affects the feeling of girls towards information technology (Bimber, 2000).

Studies on Gender:

Madell and Muncer (2004) conducted a study to check whether there exists gender differences in using internet. Sample comprised of 1340 secondary school students of England. Result showed that there exist gender differences in using internet which in general suggested something of a male bias towards internet use.

Jackson, Zhao, Kolenic, Fitzgerald, Harold and Von (2008) conducted a study on 515 children (172 African Americans and 343 Caucasian Americans) to find race and gender differences in the intensity of internet use. Findings indicated that African American males were the least intense users of computers and the Internet, and African American females were the most intense users of the Internet. Males, regardless of race, were the most intense videogame players, and females, regardless of race, were the most intense cell phone users.

Erdogan (2008) investigated the relationships among Internet usage, Internet attitudes and loneliness of Turkish adolescents. Sample comprised of 1049 adolescents. Survey method was used. Data were collected by an Internet usage questionnaire, Internet attitudes scale and UCLA loneliness scale. Findings revealed that Turkish adolescents' loneliness was associated with both increased Internet usage and Internet attitudes. Adolescents who reported excessive uses of the

Internet had a significantly higher mean score of loneliness than those who did not. Male adolescents reported higher frequency of web surfing than females and females reported higher frequency of e-mailing.

Computer Anxiety:

Now a day the world is changing rapidly with the technological advancement. So students must cater with the needs of the society. Information Technology is the most developing science. So the students must know the application of the Information Technology in daily life. This awareness depends upon the use of computer among the higher secondary students. The issue of student's computer anxiety may have far reaching effects when it comes to decisions as to how use of computer is integrated into the classroom. It is believed that if they possess less computer anxiety, then there may be a chance for them to make use of computer easily (Vinaitheerthan and Johnson, 2009).

There are many definitions of computer anxiety, and researchers have not agreed upon a standardized one. Herdman (1983) defined computer anxiety as emotional fear, apprehension, and phobia felt by individuals towards interactions with computers or when they think about using computers. Howard and Smith (1986) defined computer anxiety as "the tendency of a particular person to experience a level of uneasiness over his or her impending use of a computer".

Studies on Computer Anxiety:

Azher, Behram, Salim, Bilal, Hussain and Haseeb (2014) investigated not only the prevalence of internet addiction among the male and female students in the University of Sargodha but also the relationship between internet addiction and anxiety level of students. There were 300 students, from Masters' classes, as sample, selected through cluster sampling. Internet Addiction Scale (I.A.S) and Beck Anxiety Scale were used as assessment tools for data collection. Data was analyzed using mean, standard deviation, T-test and regression analysis. The results showed that prevalence of internet anxiety was more in male students than female students. Regression analysis showed a positive and significant relation between internet addiction and anxiety level among University students.

Yoon, Jang and Xie (2016) examined predictors of computer use and computer anxiety in older Korean Americans. Separate regression models were estimated for computer use and computer anxiety with the common sets of predictors: (a) demographic variables (age, gender, marital status, and education), (b) physical health indicators (chronic conditions, functional disability, and self-rated health), and (c) sociocultural factors (acculturation and attitudes toward aging). It was found that approximately 60% of the participants were computer-users, and they had significantly lower levels of computer anxiety than non-users. A higher likelihood of computer use and lower levels of computer anxiety were commonly observed among individuals with younger age, male gender, advanced education, more positive ratings of health, and higher levels of acculturation. In addition, positive attitudes toward aging were found to reduce computer anxiety.

Cazan, Cocorada and Maican (2016) examined the relationships between computer and internet anxiety, computer self efficacy and other personal characteristics in a Romanian context. A full-mediated model was tested. Findings revealed that low computer self-efficacy predicts anxiety, the previous education in the field of computer science has direct negative effects on computer anxiety and on the negative attitudes towards the internet. It was also revealed that no significant difference was found between the male and the female participants concerning computer anxiety, self efficacy and the negative attitudes towards the internet.

Internet Self Efficacy:

Internet self-efficacy refers to "the belief in one's capability to organize and execute Internet actions required to produce given attainments" (Eastin and LaRose, 2000). Previous internet experience is positively related to internet self-efficacy (Eastin and LaRose, 2000). Males are generally found to have higher internet skills than females. User attitude and computer anxiety are both found influential to internet self-efficacy. People with high attitudes toward computers have higher internet self-efficacy, compared to those with low attitudes toward computers. Training is helpful in the improvement of learners' internet self-efficacy, especially for those with higher attitudes toward computers, and those with low computer anxiety. (Torkzadeh, Chang and Demirhan, 2006; Torkzadeh and Van Dyke, 2002).

Studies on Internet self efficacy:

Eastin and LaRose (2000) conducted a study on undergraduate students of USA enrolled in an introductory communication class to develop an operational measure of Internet self-efficacy. Results revealed that Internet experience, outcome expectancies and Internet use were significantly and positively correlated to Internet self-efficacy judgments, and Internet stress and self-disparagement were negatively related to Internet self-efficacy.

Joo, Bong and Chai (2002) examined the effects of student motivation on performance in Web-based instruction (WBI). A total of 152 junior high school students in Seoul, Korea, participated in WBI during regular science classes. Results revealed that students' self-efficacy for self-regulated learning positively related to their academic self-efficacy, strategy use, and Internet self-efficacy. Students scores on the WBI search test were significantly and positively pre-

dicted by their self-efficacy in using the Internet. More interesting, students' academic self-efficacy beliefs were not able to predict their search test performance, whereas students' Internet self-efficacy beliefs were not able to predict their written test performance.

Wu and Tsai (2006) conducted a study to explore university students' attitudes and self-efficacy toward the internet. Moreover, the relationships between their attitudes and self-efficacy toward the internet were also investigated. Sample comprised of 1,313 students of Taiwan. It was found that male students expressed significantly more positive attitudes than females on their "perceived control" of the internet. Male students also revealed better internet self-efficacy than their female counterparts. Moreover, students having more on-line hours displayed more positive internet attitudes and internet self-efficacy. It was also found that students internet attitudes were highly correlated with their Internet self-efficacy. Results revealed that students attitudes toward the Internet could be viewed as one of the important indicators for predicting their internet self-efficacy.

Statement of the problem:

INTERNET USE IN RELATION TO GENDER AND COMPUTER ANXIETY WITH DIFFERENT LEVELS OF INTERNET SELF EFFICACY

OBJECTIVES:

The objectives of this study were:

1. To compare the Internet use by male and female adolescents.
2. To study the Internet use by adolescents at different levels of computer anxiety.
3. To study the interaction effect of:
 - internet self efficacy and computer anxiety
 - gender and computer anxiety of adolescents with respect to internet use.
4. To study the interaction effect among gender, Internet self-efficacy and computer anxiety among adolescents with respect to internet use.

HYPOTHESES:

Ho1 There is no significant difference between male and female adolescents with respect to Internet use.

Ho2 There is no significant difference among adolescents with low, moderate and high Internet self-efficacy with respect to Internet use.

Ho3 There is no significant difference among adolescents with low, moderate and high computer anxiety with respect to Internet use.

Ho4 There is no significant interaction between Internet self efficacy and computer anxiety of adolescents with respect to internet use.

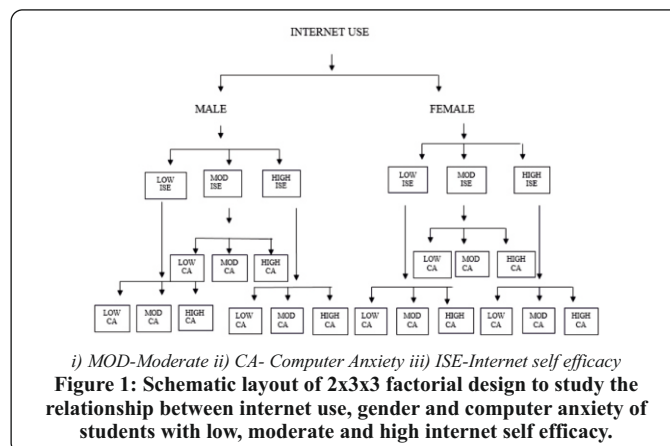
Ho5 There is no significant interaction between gender and Internet self-efficacy of adolescents with respect to internet use.

Ho6 There is no significant interaction between gender and computer anxiety of adolescents with respect to Internet use.

Ho7 There is no significant interaction among gender, internet self efficacy and computer anxiety of adolescents with respect to internet use.

Design of the study:

- Descriptive method was used.
- 2×3×3 ANOVA design was employed to study the relationship between internet use, gender and computer anxiety of students with low, moderate and high internet self efficacy.



Sample:

Stratified Random Sampling Technique was used for the selection of the sample in the present study. 400 students (i.e 200 males and females) of Government Senior Secondary schools of Chandigarh were the sample

Tools:

The following tools were used in the present study:

- 1) Internet use scale developed and validated by the researcher except for dimensions online cognition scale and Internet addiction scale which were developed by Davis, Flett and Besser (2000) and Young (2009) respectively. However these two scales were validated by the researcher in Indian setting.
- 2) Computer Anxiety scale developed by Heinssen, Glass and Knight (1987) and validated by researcher in Indian setting.
- 3) Internet Self Efficacy scale developed by Hsu and Huang (2006) and validated by researcher in Indian setting.

Delimitations of the study:

The study was delimited to class IX th students of Senior secondary schools of Chandigarh.

Statistical techniques used:

- 2x3x3 ANOVA was employed to study the relationship between internet use, gender and computer anxiety of students with low, moderate and high internet self efficacy.

ANALYSIS AND DISCUSSION:

Table1: Summary of 2x3x3 ANOVA for adolescents internet use in relation to gender and computer anxiety at different levels of internet self efficacy.

Source	Type III Sum of Squares	df	Mean Square	F	Result
Corrected Model	763740.535 ^a	17	44925.914	20.188	S
Intercept	27762187.932	1	27762187.932	12475.442	S
Gender	494534.987	1	494534.987	222.228	S
ISE	38856.815	2	19428.407	8.731	S
CA	29887.115	2	14943.558	6.715	S
Gender * ISE	53031.187	2	26515.593	11.915	S
Gender * CA	27876.214	2	13938.107	6.263	S
ISE * CA	3025.293	4	756.323	.340	NS
Gender * ISE * CA	3673.012	4	918.253	.413	NS
Error	850082.575	382	2225.347		
Total	33913722.000	400			
Corrected Total	1613823.110	399			

^a Significant at the 0.05 level; ^{**}Significant at the 0.01 level.;

NS- Not significant

MAIN EFFECTS:**Gender:**

F ratio for the difference in the Internet use between males and females adolescents was found to be significant at 0.01 level of confidence. Male adolescents Internet usage was found higher than internet usage of female adolescents. Hence H1 was rejected as significant difference was found between male and female adolescents with respect to internet use.

Internet self efficacy:

F ratio for the difference among adolescents Internet self-efficacy with respect to the Internet use was found to be significant at 0.01 level of confidence. Further t-test was employed to identify different levels at which Internet self-efficacy comes significant.

LISE = Low Internet Self efficacy
MISE = Moderate Internet Self efficacy
HISE = High Internet Self efficacy

Table 2: t-test among adolescents with low, moderate and high Internet self efficacy with respect to Internet use.

	LISE (M=264.82)	MISE (M=290.67)	HISE (M=292.42)
LISE (M=264.82)		3.240**	2.924**
MISE (M=290.67)			.269
HISE (M=292.42)			

^{*} Significant at the 0.05 level; ^{**}Significant at the 0.01 level.

From the above mentioned table 2, it was clear that significant difference was found between low, moderate and high internet self efficacy of adolescents with respect to internet use. Table 2 also indicated that:

- Adolescents with moderate internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy (t=3.240).
- Adolescents with high internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy (t=2.924).
- Adolescents with high internet self efficacy and moderate internet self efficacy exhibited comparable internet use (t=.269).

So this study provides sufficient evidence to reject null hypothesis H2. Hence H2 was rejected as significant difference was found among adolescents with low, moderate and high internet self efficacy with respect to internet use

Computer anxiety:

F ratio for the difference among adolescents computer anxiety with respect to Internet use was found to be significant at 0.01 level of confidence. Further t-test was employed to identify different levels at which computer anxiety comes significant.

LCA = Low Computer Anxiety
MCA = Moderate Computer Anxiety
HCA = High Computer Anxiety

Table 3: t-test among adolescents with low, moderate and high computer anxiety with respect to Internet use.

	LCA (M=267.92)	MCA (M=291.87)	HCA (M=295.42)
LCA (M=267.92)		1.111	1.844
MISE (M=291.87)			2.990**
HISE (M=295.42)			

^{*} Significant at the 0.05 level; ^{**}Significant at the 0.01 level.

From the above mentioned table 3, it was clear that significant difference was found between low, moderate and high computer anxiety of adolescents with respect to internet use. Table 3 also indicated that:

- Adolescents with low computer anxiety and moderate computer anxiety exhibited comparable internet use (t=1.111).
- Adolescents with low computer anxiety and high computer anxiety exhibited comparable internet use (t=1.844).
- Adolescents with high computer anxiety exhibited better internet use as compared to adolescents with moderate computer anxiety (t=2.990)

So this study provides sufficient evidence to reject null hypothesis H3. Hence H3 was rejected as significant difference was found among adolescents with low, moderate and high computer anxiety with respect to internet use.

INTERACTION EFFECTS:**Internet self efficacy X Computer anxiety (ISE X CA):**

F- ratio for the interaction between Internet self-efficacy and computer anxiety was not found to be significant even at 0.05 level of confidence. This suggests that Internet self-efficacy and computer anxiety did not interact to yield significant difference on the adolescents Internet use scores. This study could not provide sufficient evidence to reject the null hypothesis H4. Hence H4 was retained as no significant interaction was found between internet self efficacy and computer anxiety of adolescents with respect to internet use.

Gender X Internet self efficacy (G X ISC):

F- ratio for the interaction between gender and Internet self-efficacy was found to be significant at 0.01 level of confidence. Further t-test was employed between male and female adolescents at low, moderate and high Internet self-efficacy.

F LISE = female low internet self efficacy

F MISE = female moderate internet self efficacy

F HISE =female high internet self efficacy

M LISE = male low internet self efficacy

M MISE =male moderate internet self efficacy

M HISE =male high internet self efficacy

M= Mean

Table 4: t-test between male and female adolescents at low, moderate and high internet self efficacy.

	F LISE (M=204.43)	F MISE (M=260.46)	F HISE (M=264.39)	M LISE (M=325.22)	M MISE (M=320.89)	M HISE (M=320.44)
F LISE (M=204.43)		5.120**	4.682**	11.201**	13.563**	10.729**
F MISE (M=260.46)			.402	7.858**	9.200**	7.259**
F HISE (M=264.39)				7.011**	8.008**	6.433**
M LISE (M=325.22)					.925	.900
M MISE (M=320.89)						.095
M HISE (M=320.44)						

*Significant at the 0.05 level; **Significant at the 0.01 level.

Hence from table 4, it was clear that interaction effect was found to be significant between gender and internet self efficacy. Table 4 also indicated that

- Male adolescents with low internet self efficacy exhibited better internet use as compared to female adolescents with low internet self efficacy (t=11.201).
- Male adolescents with moderate internet self efficacy exhibited better internet use as compared to female adolescents with moderate internet self efficacy (t=9.200).
- Male adolescents with high internet self efficacy exhibited better internet use as compared to female adolescents with high internet self efficacy (t=6.433).
- Male adolescents with moderate internet self efficacy and male adolescents with low internet self efficacy exhibited comparable internet use (t=.925).

This suggests that gender and Internet self-efficacy interact to yield significant difference on adolescents Internet use. So H5 was rejected as significant interaction was found between gender and internet self efficacy of adolescents with

respect to internet use.

Gender X Computer anxiety (G X CA):

F- ratio for the interaction between gender and computer anxiety was found to be significant at 0.01 level of confidence. Further t- test was employed between male and female adolescents at low, moderate and high computer anxiety level.

F LCA = female low computer anxiety

F MCA =female moderate computer anxiety

F HCA =female high computer anxiety

M LCA = male low computer anxiety

M MCA =male moderate computer anxiety

M HCA =male high computer anxiety

M=Mean

Table 5: t-test among low, moderate and high computer anxiety of male and female adolescents.

	F LCA (M=244.04)	F MCA (M=230.68)	F HCA (M=275.50)	M LCA (M=325.35)	M MCA (M=320.29)	M HCA (M=321.33)
F LCA (M=244.04)		1.124	2.907**	8.901**	10.071**	8.525**
F MCA (M=230.68)			3.975**	2.907**	10.875**	8.776**
F HCA (M=275.50)				6.475**	6.814**	6.016**
M LCA (M=325.35)					1.042	.814
M MCA (M=320.29)						.218
M HCA (M=321.33)						

*Significant at the 0.05 level; **Significant at the 0.01 level.

NS- Not Significant

Hence from table 5 it was clear that interaction effect between gender and computer anxiety. Table 5 also indicated that:

- Male adolescents with low computer anxiety exhibited better internet use as compared to female adolescents with low computer anxiety (t=8.901).
- Male adolescents with moderate computer anxiety exhibited better internet use as compared to female adolescents with moderate computer anxiety (t=10.875).
- Male adolescents with high computer anxiety exhibited better internet use as compared to female adolescents with high computer anxiety (t=6.016).
- Male adolescents with low computer anxiety and male adolescents with moderate computer anxiety exhibited comparable internet (t=1.042).
- Male adolescents with high computer anxiety and male adolescents with low computer anxiety exhibited comparable internet (t=1.814).

This suggests that gender and computer anxiety interact to yield significant difference scores on students Internet use. So H6 was rejected as significant interaction was found between gender and computer anxiety of adolescents with respect to internet use

Gender X Internet self efficacy X Computer anxiety (G X ISC X CA):

F- ratio for the interaction between gender, Internet self-efficacy and computer anxiety was not found to be significant even at 0.05 level of confidence. This suggests that gender, internet self efficacy and computer anxiety did not interact to yield significant difference on students internet use score. So H7 was retained as no significant interaction was found among gender, internet self efficacy and

computer anxiety of adolescents with respect to internet use.

RESULTS:

- Male adolescents exhibited better internet use as compared to female adolescents.
- Significant difference was found among adolescents with low, moderate and high internet self efficacy with respect to internet use.
- Adolescents with moderate internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy.
- Adolescents with high internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy.
- Adolescents with high internet self efficacy and moderate internet self efficacy exhibited comparable internet use.
- There was found a significant difference among adolescents with low, moderate and high computer anxiety with respect to internet use.
- Adolescents with low computer anxiety exhibited comparable internet use as compared to adolescents with moderate computer anxiety and adolescents with high computer anxiety.
- Adolescents with high computer anxiety exhibited better internet use as compared to adolescents with moderate computer anxiety.
- No significant interaction was found between internet self efficacy and computer anxiety of adolescents with respect to internet use.

Ø Significant interaction was found between gender and internet self efficacy of adolescents with respect to internet use.

- Male adolescents with low internet self efficacy exhibited better internet use as compared to female adolescents with low internet self efficacy.
- Male adolescents with moderate internet self efficacy exhibited better internet use as compared to female adolescents with moderate internet self efficacy.
- Male adolescents with high internet self efficacy exhibited better internet use as compared to female adolescents with high internet self efficacy.
- Male adolescents with moderate internet self efficacy and male adolescents with low internet self efficacy exhibited comparable internet use.
- Significant interaction was found between gender and computer anxiety of adolescents with respect to internet use.
- Male adolescents with low internet self efficacy exhibited better internet use as compared to female adolescents with low internet self efficacy.
- Male adolescents with moderate internet self efficacy exhibited better internet use as compared to female adolescents with moderate internet self efficacy.
- Male adolescents with high internet self efficacy exhibited better internet use as compared to female adolescents with high internet self efficacy.
- Male adolescents with moderate internet self efficacy and male adolescents with low internet self efficacy exhibited comparable internet use.
- No significant interaction among gender, internet self efficacy and computer anxiety of adolescents with respect to internet use.

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